

ABSTRACT OF THE DISCLOSURE

A silver thin film (with a thickness of 50 nm) and an SiO_2 film (with a thickness of 10 nm) are deposited in this order on one side surface of a slide glass by ion beam sputtering deposition, so that a supporting substrate for sample solution is formed. A sample solution containing fluorescence molecules is placed on the SiO_2 film of the supporting substrate and a cover glass is placed on the sample solution. When light is entered upon the interface between the slide glass and the SiO_2 film at an incident angle of 59 to 60° , surface plasmon resonance is excited at the interface and thus an evanescent field is reinforced, so that fluorescence is generated efficiently from the fluorescence molecules contained in the sample solution.